THE MINISTER OF STATE IN THE MINISTRY OF RURAL DEVELOPMENT (DEPARTMENT OF RURAL DEVELOPMENT) (SHRI RAMESH-WAR THAKUR): (a) and (b) The States and Union Territories where the provisions of the Constitution (73rd Amentment) Act, 1992 are applicable, where required to enact/amend their legislations on Panchayati Raj within the stipulated period i.e. by 23rd April, 1994. All such States and Union Territories have amended their existing legislation or brought in fresh legislation on Panchayati raj within the stipulated period.

Technology to check sewage pollution

7104. SHRI KRISHAN LAL SHARMA: Will the PRIME MINISTER be pleased to state:

(a) whether it is a fact that a new technology has been developed to check sewage pollution in *the* country;

(b) if so, the details thereof;

(c) what are the locations in the country where such technology is in use; and

(d) to what extent this has proved useful and economical?

THE MINISTER OF STATE IN THE PRIME MINISTER'S OFFICE AND MINISTER OF STATE IN THE DE-PARTMENTS OF ATOMIC ENERGY, SPACE AND MINISTRY OF SCIENCE AND TECHNOLOGY (SHRI BHUVNESH CHATURVEDI) (a) Yes, Sir. Three new technologies have been deven loped for treatment of municipal wastewater to check sewage pollution.

(b) to (d) Details about each of these technologies are given in the Statement

Statement

1. Fixed Film Reactor Technology for Biomethanation of Municipal Wastewater

Fixed Film Reactor Technology for Biomethanation of Municipal Wastewater has been developed on Pilot Scale. Biomethanation of sewage generates biogas and the treated wastewater can be safety discharge in receiving bodies or can be further used for aquaculture or agriculture.

Pilot scale plan installed at Government Medical College, Nagpur—

Capacity	—50 m^3/day
BOD reduced by (Biochemical Oxygen Demand)	—90—95%
COD reduced by (Chemical Oxygen Demand)	—80—90%
Bio-Gas Yield	—0.3 m3 COD utilized have been achieved
Treated effluent BOD	—20 mg/litre
Reduction in pathogens	—94—98%

Note: Acceptable level of BOD & COD as per Indian Standard IS 2490—1982
BOD—30 mg/litre COD—250 mg/litre

Cost benefit analysis for boigas generation from Hospital wastewater for various plant capacities.

(Rupees in Lakhs)

Plant (m3/day)	Capacity cost (Rs.) (estimated)	Annual operation & (maintenance cost Rs.)	Annual benefits (Rs.)
100	4.5	1.35	0.08
500	7.0	1.85	0.38
1000	13.	2.5	0.75

Slalient Features of the Technology Package—

The process ensures complete treatment and no secondary treatment, except disinfection, is required.

The process is cost-effective as compared to the aerobic process involving high energy input.

Biogas is generated as a by-product which can be used as a fuel or for generating electricty.

The operation of the system is simple, and the operation and maintenance eosts are lower as compared to aerobic treatment.

2. Rotating Biological Rope Contractor.

Device is useful for treatment of biodegradable liquid wastes of domestic and industrial origin by aerobic biological treatment process. The technology has been extensively tested for the treatment of domestic wastewater. Studies have been carried out on Pilot Plant with capacity of 30m day for the treatment of sewage.

A modular plant of capacity 0.5 million litres/day for treatment of domestic wastewater, has been installed at Swaragashrain (U.P.) under the Ganga Action, Plan. Another plant for sewage treatment having capacity of 0.15 million litres/day has been installed in the premises of M/s Wirloskar Pneumatics Ltd., Saswad, Pune.

Evaluation of the RBEC plant after installation during December 1991 showed that, the treated effluent has, BOD less than 30 mgll (9) per cent BOD removal than suspended solids less than 50 mgll and dissolved oxygen 1.9 to 3.0 mg 1. The capital cost of treatment system is Rs. 11 lakh with an Operating cost of Rs. 0.35 lakh per annum.

3. Constructed Wetland System:

Wastewater treatment system of constructed wetland has been developed and is being evaluated on pilot scale. Macrophyte plants planted in wetland provide oxygen to the root zone for aerobic decomposition, while sand, soil and gravel in wetland renovate wastewater through ion exchange, absorption and precipitation. Microorganisms in wetland plan an important role in degradation of organics.

A pilot plant to treat 200-250m domestic waste water per day has been installed at Sainik School, Bhubaneswar in collaboration with Orissa Water Supply and Sewerage Board, Government of Orissa.

Operational cost of the treatment process is one fifth of the conventional sewage treatment technologies.